

**Amendments to the Claims:**

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A two-dimensional photonic crystal slab having a three-dimensional local structure, ~~characterized by that it comprises~~ comprising:

- a) a slab-shaped body;
- b) a plurality of areas having a refractive index different from that of the body, which are periodically arranged in the body; and
- c) an optical resonator formed by mounting a refractive index member ~~mounted on~~ the surface of the body.

2. (Currently Amended) The two-dimensional photonic crystal slab having a three-dimensional local structure according to claim 1, ~~characterized in that it comprises further~~ comprising:

\_\_\_\_\_ a waveguide formed by providing a linear defect of the modified refractive index areas in proximity to the refractive index member.

3. (Currently Amended) The two-dimensional photonic crystal slab having a three-dimensional local structure according to claim 1, ~~characterized in that~~ wherein two or more pieces of the refractive index members differing in material, shape or size are mounted on the body.

4. (Currently Amended) The two-dimensional photonic crystal slab having a three-dimensional local structure according to claim 1, ~~characterized in that~~ wherein a point-like defect of the modified refractive index areas are provided within the body and a refractive index member is additionally mounted at the position of the point-like defect.

5. (Currently Amended) The two-dimensional photonic crystal slab having a three-dimensional local structure according to claim 4, ~~characterized in that~~ wherein a plurality

of point-like defects of the modified refractive index areas having different resonant wavelengths are provided within the body, and a plurality of the refractive index members identical in material, shape and size are arranged on a surface of the body at positions of the point-like defects.

6. (Currently Amended) The two-dimensional photonic crystal slab having a three-dimensional local structure according to claim 1, ~~characterized in that~~ wherein the refractive index members are mounted on both sides of the body.

7. (Currently Amended) The two-dimensional photonic crystal slab having a three-dimensional local structure according to claim 6, ~~characterized in that~~ wherein the refractive index members are mounted at the same position on both sides of the body.

8. (Currently Amended) The two-dimensional photonic crystal slab having a three-dimensional local structure according to claim 7, ~~characterized in that~~ wherein identical refractive index members are mounted at the same position on both sides of the body.

9. (Currently Amended) The two-dimensional photonic crystal slab having a three-dimensional local structure according to claim 1, ~~characterized in that~~ wherein it is provided with a point-like defect of the modified index areas asymmetrical between front and back sides.

10. (Currently Amended) The two-dimensional photonic crystal slab having a three-dimensional local structure according to claim 1, ~~characterized in that~~ wherein the refractive index member is made of the same material as that of the body.

11. (Currently Amended) The two-dimensional photonic crystal slab having a three-dimensional local structure according to claim 1, ~~characterized in that~~ wherein the refractive index member is made of a material whose refractive index changes when the material receives an external operation.

12. (Currently Amended) ~~The~~ A two-dimensional photonic crystal slab having a three-dimensional local structure ~~according to claim 1, comprising:~~

- \_\_\_\_\_ a) a slab-shaped body;
- \_\_\_\_\_ b) a plurality of areas having a refractive index different from that of the body,  
which are periodically arranged in the body; and
- \_\_\_\_\_ c) a refractive index member mounted on the surface of the body,  
\_\_\_\_\_ characterized in that wherein the refractive index member is a cylinder whose top is  
concave or convex.

13. (Withdrawn-Currently Amended) A method of manufacturing ~~a~~the two-dimensional photonic crystal slab having a three-dimensional local structure, ~~characterized by that it comprises~~ of claim 1, the method comprising:

\_\_\_\_\_ a process for creating a refractive index member in which a gas material used for creating a refractive index member is introduced onto a two-dimensional photonic crystal and a focused ion beam is irradiated onto the crystal to deposit the refractive index member.

14. (Withdrawn-Currently Amended) A method of manufacturing ~~a~~the two-dimensional photonic crystal slab having a three-dimensional local structure, ~~characterized by that it comprises~~ of claim 1, the method comprising:

\_\_\_\_\_ a process for creating a refractive index member in which a refractive index member beforehand is mounted onto the two-dimensional photonic crystal with a nanomanipulator.

15. (New) A two-dimensional photonic crystal slab having a three-dimensional local structure wherein the slab functions as an optical multiplexer/demultiplexer and the slab comprises:

- a) a slab-shaped body;
- b) a plurality of areas having a refractive index different from that of the body,  
which are periodically arranged in the body;
- c) an optical resonator formed by mounting a refractive index member on the surface of the body; and

d) a waveguide formed by providing linearly arranged defects of the modified refractive index areas in proximity to the refractive index member.